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(54) **MULTI-COLOR LIGHT EMITTING DEVICES WITH COMPOSITIONALLY GRADED CLADDING GROUP III-NITRIDE LAYERS GROWN ON SUBSTRATES**

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CPC ***H01L 33/007*** (2013.01); ***H01L 29/778*** (2013.01); ***H01L 33/025*** (2013.01); ***H01L 33/12*** (2013.01); ***H01L 33/325*** (2013.01); *H01L 29/7787* (2013.01); *H01L 33/06* (2013.01)

(58) **Field of Classification Search**

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See application file for complete search history.

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(57) **ABSTRACT**

A light emitting device includes a substrate, multiple n-type layers, and multiple p-type layers. The n-type layers and the p-type layers each include a group III nitride alloy. At least one of the n-type layers is a compositionally graded n-type group III nitride, and at least one of the p-type layers is a compositionally graded p-type group III nitride. A first ohmic contact for injecting current is formed on the substrate, and a second ohmic contact is formed on a surface of at least one of the p-type layers. Utilizing the disclosed structure and methods, a device capable of emitting light over a wide spectrum may be made without the use of phosphor materials.

15 Claims, 4 Drawing Sheets